ORIGINAL ARTICLE

Benefits of Lumbar Facet Joint Block For Persistent Backache After Lumbar Discectomy An Analysis of 58 Patients

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ABSTRACT:

Object: *The author evaluated the effectiveness of using facet joint block with local anesthetic agents and steroid medication for the treatment of persistent low-back pain in a medium-sized series of patients who underwent lower lumbar disc surgery.*

Methods: *Over a period of 2 years, the author performed 130 facet joint injections in 58 patients with persistent low-back pain after lumbar discectomies at L3/4, L4/5 and L5/S1 levels in Combined Military Hospital Rawalpindi. All of the 21 women and 37 men (mean age 44 years, range 23 to 68) entered into the trial had low back pain for over one month localised to one side with tenderness and local muscle spasm over the facet joints. All had a negative straight-leg-raising test but 17 had slight pain radiating into the posterior thigh on the same side where surgery was performed. The main parameter for the success or failure of this treatment was the relief of the pain. For the first injection mainly a diagnostic procedure the author used a local anesthetic (1 ml bupivacaine 1%). In cases of good response, Depomedral 80 mg was injected in a second session to achieve a longer-lasting effect. Long-lasting relief of the low-back pain was reported by 43 patients (74%) during a mean follow-up period of 10 months. Nine patients (15.2%) noticed a general improvement in their pain. Six patients (10%), however, experienced no improvement of pain at all. There were no cases of infection or hematoma.*

Conclusions: *Lumbar facet joint block is a minimally invasive procedure to treat facet joint pain in post discectomy period. The procedure also seems to be useful for distinguishing between facet joint pain from postoperative pain due to inappropriate neural decompression after lumbar surgery.*

INTRODUCTION

Typically hypertrophy and reactive remodeling of the articular processes are the degenerative changes seen in the lumbar facet joint in aging individuals.[34] These facet joints have a close topographic relationship to delicate neural and vascular structures of the spinal canal.[4,13,35] These degenerative changes are thought to cause low-back pain. Anatomically, the ipsilateral dorsal root ganglia supply the lumbar facet joint, segmentally and nonsegmentally.[40,41] Some of the sensory fibers from the facet joint may pass through the paravertebral sympathetic trunk, reaching the L-1 and/or L-2 dorsal root ganglia. Therefore, facet joint pain originating from the lower lumbar levels may be distributed in L-1 and L-2 areas and is explained as "referred pain." An extensive network of small nerve fibers and free encapsulated nerve endings exists in the lumbar facet joint capsule. Low-threshold and high-threshold mechanoreceptors fire when the facet joint capsule is stretched or is subjected to localized compressive forces.[40]

The facet joint is subjected to high stress and strain[2] and may be affected by rheumatoid arthritis, ankylosing spondylitis, osteoarthritis, and, rarely, synovial cysts and infections. Microtrauma to the facet joint after discectomy probably due to overloading may also cause pain. The resulting tissue damage or inflammation is likely to cause release of the content of the joint in which highly tissue-irritating properties affect the nerve endings in these joints,[26] resulting in low-back pain. This may be in the form of pain in the inguinal region or sometimes of radicular pain secondary to irritation of the adjacent lumbar nerve root.

The main symptoms involved in facet joint syndrome are low-back pain with pseudoradicular radiation. Degenerative changes in the facet joint often

occur long before they can be revealed on plain radiographs of the spine; these changes can be demonstrated on CT or MR imaging of lumbar spine. The diagnosis of facet joint syndrome is based primarily on one of exclusion.[5,7,8,12,16,17,19,20,23,25,29,41,43]

Usually, the treatment of facet joint syndrome is to denervate the joint. Because of the aforementioned reasons, facet joint block therapy with steroid agents is a routine procedure, the goal of which is to reduce the inflammation, denervate the joint, and relieve the pain.[22]

DISCUSSION

In this study the group of patients that benefited from facet joint block contained individuals with acute postoperative uncontrollable local and pseudoradicular pain. In these patients, postop MRI excluded the possibilities of recurrent disc prolapse and insufficient decompression of the spinal canal. Only the operated level and painful side received selective injection. In 43 (74%) of 58 patients the facet joint block was successful in relieving pain directly and in maintaining this relief during follow up.

Because most cases of acute back and leg pain improve within few weeks postoperatively,[1,42] only those patients were included in the study whose pain in lower back either persisted as such or increased after surgery after 4-6 weeks time. In these cases, the facet joint block served as a therapeutic procedure. The cause of pseudoradicular pain after microdiscectomy and osseous decompression in spinal stenosis is most likely the result of reduction of the medial facet joint with opening and release of contents of the joint. The contents of the joint cause irritation of the adjacent nerve root and therefore pain.[26,36] Symptoms in these patients responded to facet joint injection.

Provided other causes are excluded, there is an indication to perform a diagnostic facet joint injection,[21,31,36] even in cases of radicular pain in the absence of nerve root compression. Typically, there is no relation in most of the cases between the extent of the scar tissue demonstrated on CT scans and the degree of pain experienced by the patient.[32] In some cases of persistent postoperative pain, especially back pain, extensive back muscle injury may be a cause.[18] This is especially the case following extensive and multisegmental laminectomy, as would be performed in multisegmental lumbar spinal canal stenosis. In these cases the lumbago predominates the symptomatology. These patients are not candidates for facet joint injections.

Unfortunately CT scans of the lumbar spine do not reveal early degenerative changes in the facet joint, and they were unable to demonstrate facet joint inflammation. Using sophisticated methods like single-photon emission CT scanning to identify the affected joint[6] is expensive, time consuming, and is not available in our setup.

On the other hand, if the clinical picture and the radiological features do not help to indicate the one level or side to be treated, it is necessary to inject the two or three lower levels bilaterally.

Facet joints were palpated clinically There was no need for the infiltration of the skin with a local anesthetic. Six ml (30 mg) of Bupivacaine hydrochloride mixed with 2 ml (80mg) of Depomedral (methylprednisolone acetate) was injected in pericapsular region of the facet joint about 3-4 cm lateral to spinous process of involved segment. The injection is given to affect nerve endings in the capsule and it improved the backache upto patients satisfaction.

According to some authors postoperative pseudoradicular pain may be minimized by making an intraoperative intra-articular injection of corticosteroid into the opened joint. Similar results can be obtained if one also coagulates the joint, although there is no long-term difference in the response between percutaneous facet joint coagulation and facet joint injection with corticosteroids.[16,17]

Because the facet joint behaves similarly to a myofacial trigger point, the effect of a local anesthetic usually lasts longer than its pharmacological effect. All of the patients reported marked diminution of symptoms many days after the first injection. Although the lumbar facet joint as a source of low-back pain becomes more confusing the more clinical studies that are reported,[5,9,10,14,17,19,25,33,36,38,39] the facet joint may be responsible for at least some degree of low-back pain with pseudoradicular and radicular radiation.[2,3,7,8,11,12,15,17,21,24,26-28,30,37,43] Experimentally, a marked reduction of the nerve activity occurs in facet tissue injected with local anesthetic and corticosteroid agents.[2] Therefore, percutaneous facet joint injection aims to denervate the facet joint, from which the pain seems to originate.

RESULTS

Symptom Relief

Long-lasting relief of the low-back pain was reported by 43 patients (74%), in whom only two or three injections were required. The pain did not recur during the 12-month follow-up period. All of these 43 patients

suffered from acute postoperative pain either after microdiscectomy or osseous decompression secondary to lumbar spinal canal stenosis. Nine patients (15.2%) noticed a general improvement in their pain. Six patients (10%), however, experienced no improvement of pain at all.

Procedure-Related Complications

Two patients (3.4%) reported a transient increase of pain directly after the injection. Three patients (5.17%) suffered from transient radicular sensory changes. In one patients (1.72%), the dura mater was accidentally punctured, causing temporary paraplegia in one patient that resolved within 3 hours. No infection or symptommatic hematomas were noted[2].

The primary role of facet joint block can be diagnostic or therapeutic. After disc surgery facet joint block is used as an effective therapy for facet joint syndrome in patients in whom symptoms fail to respond to conservative treatments of low back pain.

The results for the symptomatic relief of pain have been encouraging, impression is that this method is beneficial and warrants continuous application.

Finally, successful rehabilitation of the patients should be feasible due to prolonged pain relief provided by this treatment.

Table 1: *Spinal levels treated with block.*

Level	Unilat (%)	Bilat (%)
L5-S1	15 (25.7)	11 (19.1)
L4-5	12 (21.3)	3 (6)
L3-4	3 (5.2)	

Table 2: *Summary of complications.*

Complications	No. of Patients	Reaction
transient increase of pain	2 (3.4%)	no specific therapy
puncture of subarachnoid space transient paraplegia	1 (1.74%)	no specific therapy
transient hypesthesia	3 (5.17)	no therapy

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